

IN THE CLAIMS:

Please cancel Claim 36 without prejudice to or disclaimer of its subject matter.

Please amend Claims 1, 4, 14, 17, 21, 25, 30, 33, 41 and 42 as follows:

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1. (Amended) An ink-jet recording apparatus for forming an image on a recording medium comprising a plurality of ink discharge means and a plurality of ink discharge openings and containing a plurality of inks, wherein the plurality of inks is discharged from the plurality of ink discharge openings by driving the ink discharge means, each ink having a penetrability, a dye density and a color;

said plural ink discharge openings corresponding to a plurality of inks with different dye densities, wherein the penetrabilities of inks having different dye densities and same colors are different from each other and ink having low dye density among the plurality of inks of different dye densities and same colors has more penetrability with respect to the recording medium than ink having high dye density;

and wherein said plurality of inks contain different component ratios of a [surface active component] surfactant.

Sub J1 > wherein an ink having a relatively high dye density has a lower component ratio of said [surface active component] surfactant than an ink having a relatively low dye density,

said apparatus further comprising control means for performing gradational recording by controlling discharge of each of the plurality of inks with different dye densities based on [an] inputted [multiple value] image data, the image data being data representing a density level.

Claim 4,

Line 6, change "surface active component" to --surfactant--;

Line 7, change "surface" to --surfactant--; and

Line 8, delete "active component".

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2 forming an image on a recording medium comprising the steps of:
providing a plurality of inks, each having a penetrability, a dye density and a color;
providing a recording medium;
providing a plurality of ink discharge openings and a plurality of ink discharge means;

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discharging onto the recording medium the plurality of inks from the plurality of ink discharge openings by driving the ink discharge means;

said plurality of ink discharge openings corresponding to a plurality of inks with different dye densities, wherein the penetrabilities of inks having different dye densities and same colors are different from each other, and ink having low dye density among the plurality of inks of different dye densities and same colors has more penetrability with respect to the recording medium than ink having high dye density;

wherein said plurality of inks contain different component ratios of a [surface active component] surfactant, wherein an ink having a relatively high dye density has a lower component ratio of said [surface active component] surfactant than an ink having a relatively low dye density;

performing gradational recording by controlling discharge of each of the plurality of inks with different dye densities based on [an] inputted [multiple value; and

forming an image on the recording medium] image data,
the image data being data representing a density level.

Claim 17,

Line 6, change "surface active component" to
--surfactant--;

Line 7, change "surface" to --surfactant--; and

Line 8, delete "active component".

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21. (Amended) An ink-jet recording apparatus,
comprising a recording head equipped with a plurality of ink
discharge means, and a plurality of discharge ports and
containing a plurality of inks, wherein the plural discharge
ports of said recording head are comprised of a plurality of
discharge port trains corresponding to the plurality of inks,
wherein the plurality of inks is discharged onto a recording
medium to form an image, each of the plurality of inks having a
penetrability, a color and a different dye density, wherein the
penetrabilities of inks having different dye densities and same
colors are different from each other and ink having low dye
density among the plurality of inks of different dye densities
and same colors has more penetrability with respect to the
recording medium than ink having high dye density;

and wherein said plurality of inks contain different
component ratios of a [surface active component] surfactant,
wherein an ink having a relatively high dye density has a lower

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component ratio of said [surface active component] surfactant
than an ink having a relatively low dye density,

said apparatus further comprising control means for
performing gradational recording by controlling discharge of each
of the plurality of inks with different dye densities based on
[an] inputted [multiple value] image data, the image data being
data representing a density level.

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Claim 25,

Line 7, change "surface active component" to
--surfactant--;

Line 8, change "surface active" to
--surfactant--; and

Line 9, delete --component--.

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30. (Amended) An ink-jet recording apparatus,
comprising a plurality of recording heads equipped with a
plurality of ink discharge means and a plurality of discharge
ports and containing a plurality of inks, wherein said plural
recording heads correspond to the plurality of inks, each ink
having a penetrability, a color and a different dye density,
wherein the plurality of inks is discharged onto a recording
medium to form an image, and wherein the penetrabilities of inks
having different dye densities and same colors are different from

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each other and ink having low dye density among the plurality of inks of different dye densities and same colors has more penetrability with respect to the recording medium than ink having high dye density;

and wherein said plurality of inks contain different component ratios of a [surface active component] surfactant, wherein an ink having a relatively high dye density has a lower component ratio of said [surface active component] surfactant than an ink having a relatively low dye density,

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said apparatus further comprising control means for performing gradational recording by controlling discharge of each of the plurality of inks with different dye densities based on [an] inputted [multiple value] image data, the image data being data representing a density level.

Claim 33,

Line 7, change "surface active component" to
--surfactant--;

Line 8, change "surface active" to
--surfactant--; and

Line 9, delete "component".

Claim 41,

Line 4, change "surface active component" to
--surfactant--.

Claim 42,

Line 4, change "surface active component" to
--surfactant--.

Please add new Claims 63-84 as follows:

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--63. An ink-jet recording apparatus for recording
by discharging a plurality of inks having different densities of
a same color series for use with an ink-jet head for discharging
ink, comprising:

a recording control means for recording by
discharging a plurality of inks having different densities of a
same color series by said ink-jet head, wherein the recording
control means controls discharge of each of said plurality of
inks in accordance with a level represented by input image data,

wherein each of said plurality of inks having
different densities of the same series of color contains a
different amount of surfactant for enhancing penetrability with
respect to a recording medium, such that an ink having a low

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~~density contains a greater amount of said surfactant than an ink having a high density.~~

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64. An ink-jet recording apparatus according to claim ⁵²63, wherein said plurality of inks consists of a first ink with a relatively high dye density and a second ink with a relatively low dye density in comparison with the first ink, wherein said first ink contains no surfactant and said second ink contains said surfactant.

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65. An ink-jet recording apparatus according to claim ⁶²63, comprising an image processing means that controls the number of recording dots per unit area of said recording medium in accordance with an inputted image signal to perform gradation recording.

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66. An ink-jet recording apparatus according to claim ⁵⁴65, further comprising a distribution means for distributing into recording data for said plurality of inks with different dye densities in accordance with a gradation indication by an inputted image signal.

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67. An ink-jet recording apparatus according to claim ⁵²63, wherein said ink is discharged by an ink discharge

means that discharges an ink by utilizing heat energy and which is provided with an electrothermal energy converting means for generating heat energy to be given to an ink.

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⁵⁷ 68. An ink-jet recording apparatus according to claim ⁵⁶67, wherein said ink discharge means causes an ink to develop a state change by the heat energy applied by said electrothermal energy converting means, thereby discharging the ink through a discharge port according to said state change.

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⁵² 69. An ink-jet recording apparatus according to claim ⁵²68, further comprising an image reading means for reading an original image.

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⁵⁰ 70. An ink-jet recording apparatus according to claim ⁵⁰69, further comprising an image transmitting and/or receiving means.

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⁶⁰ 71. An ink-jet recording apparatus according to claim ⁵⁹70, further comprising an image reading means for reading an original image.

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72. An ink-jet recording apparatus according to claim ⁵²63, further comprising an input means for entering a recording signal.

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⁶¹ 73. An ink-jet recording apparatus according to claim 72, wherein said input means is a keyboard.

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74. An ink-jet recording method for recording by discharging a plurality of inks having different densities of a same color series for use with an ink-jet head for discharging ink, comprising the steps of:

inputting image data representing a density level;
generating data for discharging ink, corresponding to each of a plurality of inks having different densities of a same color series in accordance with said image data; and
recording by discharging ink based on said generated data,

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wherein each of said plurality of inks having different densities of the same color series contains a different amount of surfactant for enhancing penetrability with respect to a recording medium, such that an ink having a low density contains a greater amount of said surfactant than an ink having a high density.

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75. An ink-jet recording method according to claim
⁶³74, wherein said plurality of inks consists of a first ink with a relatively high dye density and a second ink with a relatively low dye density in comparison with the first ink, wherein said first ink contains no surfactant and said second ink contains said surfactant.

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⁶³76. An ink-jet recording method according to claim
74, comprising an image processing step that controls the number of recording dots per unit area of said recording medium in accordance with an inputted image signal to perform gradation recording.

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⁶⁵77. An ink-jet recording method according to claim
76, further comprising a distribution step for distributing into recording data for said plurality of inks with different dye densities in accordance with a gradation indication by an inputted image signal.

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⁶³78. An ink-jet recording method according to claim
74, wherein said ink is discharged by an ink discharge step that discharges an ink by utilizing heat energy and includes an electrothermal energy converting sub-step for generating heat energy to be given to an ink.

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⁶⁷78. An ink-jet recording method according to claim 78, wherein said ink discharge step causes an ink to develop a state change by the heat energy applied by said electrothermal energy converting sub-step, thereby discharging the ink through a discharge port according to said state change.

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⁶³80. An ink-jet recording method according to claim 74, further comprising an image reading step for reading an original image.

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⁶³81. An ink-jet recording method according to claim 74, further comprising an image transmitting and/or receiving step.

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⁷⁰82. An ink-jet recording method according to claim 81, further comprising an image reading step for reading an original image.

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⁶³83. An ink-jet recording method according to claim 74, further comprising an input step for entering a recording signal.

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⁷²84. An ink-jet recording method according to claim 83, wherein said input step utilizes a keyboard.--.